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David W. Nylén  
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## C.37 Sales Territory Design

### RULES OF THUMB FOR SALES TERRITORY DESIGN

The purpose in designing territories for the sales force is to match the selling effort in each territory with the sales and profit potential of that area so that total profits are maximized. The **sales territory design** decision is closely related to determination of **sales force size** (see GLOSSARY entry C.35). Frequently the two decisions are made at the same time since a change in sales force size usually requires a change in sales territory design. Moreover, much of the data used in the two decisions is the same.

**Reasons for Using Sales Territories.** Small companies selling locally or with few salespeople may be able to effectively plan and coordinate their personal selling programs without assignment of salespeople to specific territories. However, except in those circumstances, some form of allocation of sales coverage should be used. Advantages of using sales territories are these:

- **Market Coverage.** Use of sales territories allows the firm to control market coverage so that all customers receive a level of service proportional to their potential. If territories are an appropriate size, salespeople will not be tempted to skim the market, working only lucrative accounts. Using sales territories also allows the firm to control the proportion of existing customers to prospective customers within each territory, thus influencing the salesperson's prospecting activities.
- **Role Definition.** Assignment of a salesperson to a territory provides a clear definition of role expectations. With a specific territory assigned, salespeople have a clearer idea of their responsibilities and know the basis on which they will be evaluated.
- **Managerial Planning and Control.** Sales planning, in any but the most simple situations, re-

quires use of sales territories. Allocation of sales resources cannot be done without knowledge of the relative potential of sales areas. Likewise, evaluation of the effectiveness of resource allocation requires formation of sales quotas and expense budgets by territory. These territorial quotas and budgets serve as standards against which actual sales performance is compared.

- **Sales Force Evaluation.** Evaluation of salesperson effectiveness is made easier and fairer when sales territories are assigned. Sales quotas can be set for each territory based on the potential in the area and other factors influencing sales so that each salesperson knows what performance is expected. Sales statistics can be gathered by territory, providing objective evaluation on the performance of each salesperson.

**Criteria for Sales Territory Design.** Before developing a process for designing sales territories, we should clarify the characteristics of ideal sales territories.

Conceptually, sales territory design is a problem in allocation of a limited resource to alternative uses, much like the problem of geographically allocating advertising dollars (see GLOSSARY entry C.1). In the case of sales territory design, assuming the size of the sales force has been determined, the marketer seeks to determine how customers and prospective customers should be divided among a fixed group of salespeople. The equimargin principle from microeconomics tells us that a sales territory is of optimal size when shifting a customer (or prospective customer) from one territory to another will not result in an increase in profits. The territories are then equal "at the margin."

Applying the equimargin principle to sales territory design requires knowing the sales response of each coverage unit, which may be a customer, a group of customers, or an area. In other words, the marketer must

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know by how much sales and profits will change if the amount of sales effort allocated to a customer is increased or decreased by changing the territory to which they are assigned. Because this information is difficult to develop, many marketers in forming sales territories use rules of thumb to define sales territories whose profitability will be approximately "equal at the margin." The conditions that the territories must fulfill and that serve as rules of thumb for forming approximately equal sales territories are these:

- *Equal Potential.* Sales territories should have equal sales potential. **Sales potential** is the amount of sales expected from current and prospective customers in the coming planning period. As a sales territory increases in potential, sales from that territory can be expected to increase, but at a diminishing rate. Why does sales efficiency decrease? If one sales territory has many more customers than others, the customers in this territory will receive less effort from the salesperson assigned. Sales and profits would go up if some customers were shifted from the high potential territory to a lower potential one where they would receive more selling effort. The rule of thumb is that sales territories should be about equal in sales potential.
- *Equal Workload.* Sales territories should be formed so that the workload of salespersons is about equal. In part this is a matter of fairness among salespeople. More important, there is evidence that sales are inversely related to salesperson workload.<sup>1</sup> A primary variable in determining workload is the number of sales calls that the salesperson is expected to make. This will vary by type of customer and by number and type of prospect. If one sales territory requires more sales calls than others, the productivity of the salesperson in that territory will be lowered. Sales could be increased by shifting customers from the heavy workload territory to one with a lighter workload. Ide-

ally, territories should be designed so that workload is equalized.

- *Minimize Travel.* Sales territories should be designed so that travel is minimized. Travel time is one of the components of workload; therefore, designing territories to minimize travel will increase salesperson selling efficiency. Travel is also a major expense item that reduces the profitability of sales; thus reducing travel increases territory profitability.

These rules of thumb will be used in the heuristic process described below for designing sales territories. They also serve as criteria for evaluating existing sales territories. Changing conditions frequently drive sales territories out of balance, creating a problem in sales force productivity.

### PROCESSES FOR DESIGNING SALES TERRITORIES

Two processes have been developed for designing sales territories. One approach uses a computer-based model to create territories using the equimargin principle to maximize profits. The second approach uses heuristics or rules of thumb to generate a satisfactory, if not optimal, territory design.

*A Heuristic Process for Sales Territory Design.* The traditional approach in designing sales territories relies on the three rules of thumb outlined earlier. It designs territories so that each has approximately equal sales potential, provides equal workload for salespeople, and minimizes travel. This heuristic process is appropriate for both the original development of sales territories and the revision of existing sales territories that have become unbalanced. The process has four steps.

- *Step 1: Select the Coverage Unit.* Sales territories are formed by aggregating customer coverage units. The units from which territories are made up are usually small geographic areas such as states, counties, ZIP code zones, or Standard Metropolitan Statistical Areas (SMSAs). The coverage unit chosen should be smaller than the territory and, for conve-

<sup>1</sup>For evidence on the relationship of sales results to territory sales potential and to salesperson workload, see Henry C. Lucas, Jr., Charles B. Weinberg, and Kenneth W. Clowes, "Sales Response as a Function of Territorial Potential and Sales Representative Workload," *Journal of Marketing Research* 12 (August 1976), pp. 298-305.

nience in mapping and gathering statistics, should utilize established geopolitical boundaries. In the next step, geographic areas are converted to customer coverage units by determining the location of customers and potential customers within each area. It is also possible, especially when customers are few in number, to use individual customers, groups of customers, or types of customers as the coverage unit, building sales territories by aggregating customers rather than geographic areas.

- *Step 2: Conduct a Coverage Analysis.* Before sales territories can be drawn, data must be gathered so that the three rules of thumb discussed earlier can be put into practice. (1) Sales potential for each of the coverage units must be determined. Sales from current customers must be forecast for the coming period and prospective customers must be evaluated to determine their potential. (See GLOSSARY entry C.16 on **sales forecasting**.) (2) Salesperson workload must be estimated for each coverage unit. The usual approach is to determine the customers and potential customers in each coverage unit. Customers and prospects are then classified, such as into A, B, and C classes, according to the number of sales calls that they require each year. The number of calls required is then aggregated for each coverage unit as a measure of the workload for that unit.<sup>2</sup> (3) The travel requirement for a coverage unit is difficult to estimate. One approach is to locate customers and prospects within each unit on a map and measure the time or mileage required to make a loop through all customer and prospect locations. (4) Any other environmental factors that will affect the ability to cover a unit should be determined and noted. Examples might be unusual competitive, geographic, weather, economic, or political conditions.
- *Step 3: Form Tentative Territories.* Tentative territories are next formed using one of the three rules of thumb. Most often, sales potential is used first because of its importance in determining sales and profitability. The target size of each territory is determined by dividing the total sales potential for all coverage units by the number of salespeople available for as-

signment. Assuming that the coverage units are geographic areas, tentative sales territories are formed by joining together adjoining coverage units until a territory of target size is reached.

- *Step 4: Adjust Territory Design for Other Factors.* The tentative territory design should next be adjusted for workload, travel, and other environmental factors. The salesperson workload in terms of number of sales calls should be calculated for each territory by aggregating the call requirements of the coverage units making up the territory. If workloads are not reasonably balanced among territories, territory adjustments should be made. Travel time should be treated in the same way by calculating total travel time for each territory and making adjustments where there are imbalances. Unusual environmental conditions within one of the territories may call for further adjustment. The resulting territories should be a satisfactory and fair compromise among the factors that contribute to territory sales and profits.

**Computer-Based Models for Sales Territory Design.** Unlike the heuristic approach, computer-based models for sales territory design attempt to estimate the sales response of each coverage unit to different levels of selling effort. Coverage units are then combined into territories by a computer program that generates territories with equal and optimal sales and profit response to the sales effort applied.

The process for application of a computer-based model to sales territory design follows these steps:<sup>3</sup>

- *Structure the Decision.* A number of preliminary steps must be taken to define the decision that is to be made by the model. With this approach it is possible not only to define sales territories, but also to decide separately or simultaneously on the number of salespeople to use and how to assign them. The decision must be specified. As in the heuristic approach, a coverage unit must be selected, a

<sup>2</sup>For an example of this process, see Walter J. Talley Jr., "How to Design Sales Territories," *Journal of Marketing* 25 (January 1961), pp. 7-13.

<sup>3</sup>This discussion is based on David W. Cravens and Raymond W. LaFarge, "Salesforce Deployment Analysis," *Industrial Marketing Management* 12 (1983), pp. 179-92.

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time period for the analysis decided upon, and a workload measure (usually number of sales calls) selected.

- *Select a Model.* Several sales force models are available. They are classified as empirical or judgment-based. Empirical models use historical data for past periods for each coverage unit to determine the factors that result in changes in coverage unit sales. From this, the model calculates expected sales response by coverage unit to varying levels of selling effort. The model then uses the sales response functions to combine the coverage units into the most profitable sales territory design, number of salespeople, or salesperson assignment.

Judgment-based models use a similar computational approach, but the data for the model are based on executive opinion rather than on historical data. Salespeople and sales managers are asked to provide their subjective estimates of the sales response of each coverage unit to changes in some factor such as selling effort. The model converts these estimates into sales response functions for each coverage unit. The sales response functions are then used as in the computer model to generate sales force allocation decisions.

- *Provide Data for the Model.* Providing data for the model is the major work element of the computer model process. The approach taken depends on the model chosen. For the empirical model, data must be extracted from analysis of company records. For the judgment-based model, estimates are generated through questioning of salespeople and executives. The data-gathering step must include all factors believed to have an influence on market response for each coverage unit. These include measures of sales force effort and its ex-

pected outcome, sales potential of various classes of accounts, location of customers and prospects, travel time and cost by coverage unit, and environmental and competitive influences.

- *Implement the Model.* With the data available, the model is run to provide proposed decisions to sales territory, sales force size, and salesperson assignment issues. Implementation should consider the impact of the proposed changes on both the sales force and customers. Gradual or test implementation is sometimes called for.

The computer-based model approach is broader in scope than the heuristic approach, since it can be used for a variety of sales force deployment problems. However, the model approach does not work well in a rapidly changing environment. It is most appropriate for fine-tuning existing sales territories rather than for use in a new sales organization where historical data and sales force experience are not available.

### SUGGESTIONS FOR FURTHER READING

- CRAVENS, DAVID W., and RAYMOND W. LAForge. "Salesforce Deployment Analysis." *Industrial Marketing Management* 12 (1983), pp. 179-92.
- LODISH, LEONARD M. "'Vaguely Right' Approach to Sales Force Allocations." *Harvard Business Review* (January-February 1974), pp. 119-24.
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